HOW TO GROW CELERY ANYWHERE

How to Grow Celery

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GIVING THE PRINCIPLES WHICH GOVERN THE GROWTH OF CELERY,

BY

PETER J. SCHUUR,

Kalamazoo, Mich.

Bontanical Description :-- *Apium Graveolens.* Nat. Ord. *Umbelliferæ.* Celery is a native of Holland and England, and being found there in marshy places and ditches near the sea coast. It is a biennial. In its wild state two kinds are found, the white and red.

INTRODUCTION.

IN presenting this work to the public I trust it will be the means of assisting my fellow market gardeners, as well as private parties, to grow that most delicious of all vegetables, **Celery.** Being here in this great Celery growing district, and growing it to a certain extent myself for fifteen years, I deem myself competent to write such a work. The teachings in this book are given from a standpoint of experience and close observations, and there is nothing theoretically or imaginary in it, as has been the case with some writers. This book gives all details however small, and it is sent forth with the hope that it will not only be kindly received but may serve to promote the growth of celery.

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Kalamazoo, Mich., 1896.

CELERY CULTURE.

I.

How to Test Seeds.

The testing of seed is a very simple but necessary process and may be done as follows: Sow 100 seeds in a shallow pan, or basin, filled with mellow earth, covering them with the earth from 1/16 to 1/8 of an inch. Water sparingly, just enough to keep them moist, and keep them warm. In from 14 to 21 days the seed will come up; count the seeds that failed and plant your seed in the seed bed accordingly. Planting the seed too thickly will thus be avoided.

The following is another quick way of testing the life of seed: Throw a number of seeds on a hot cook stove. Be sure that the stove is hot, and every seed that has life in it will pop.

Still another way is to put a layer of cotton batting in a bowl or small milk pan, sprinkle with lukewarm water, drop 100 seeds on the batting and cover with another layer of batting. Lay a pane of glass over the basin and keep moist and

warm. After about 15 days remove the top layer. If it is found that the seed is not sprouted either it has been kept too cold, too hot, or it is worthless. If the seed has been kept too hot, the test is of no value and should be applied again. If the seed has been kept too cold, set aside for another five or ten days, after which examine it again. If the seeds are then found sprouted, take account of the number that failed and plant the seed bed accordingly.

Perhaps it is unnecessary to add that the object of these tests is to determine how thickly to plant the seed in the seed bed.

II.

What Varieties are Best Adapted to Different Climates.

It is impossible to tell, with absolute certainty, what variety of celery would best be planted any year.

Each variety is best adapted to some particular kind of season, especially in respect to the amount of rainfall during the season. But the seasons, in the same locality, even, are as variable as the winds. Therefore, the best that can

be done is to give all the information possible for an average season.

For states in the same latitude as Kalamazoo, Mich., and having about the same rainfall, White Plume is best for summer and early fall use; but for late fall and winter, the green varieties should be planted. The tender White Plume will not stand very dry weather, or very cold, and should be out of the way before freezing weather sets in. If it cannot be sold quick enough to be out of the way by that time it should be trenched and stored.

In Southern and arid states, where irrigation must be depended upon for moisture, the green varieties, such as the Giant Paschal, the Boston Market, and others equally hardy would better be planted. These kinds will best stand frost and hot, dry winds. They should be planted quite early, as they are of slower growth than the Golden Heart, Perfection-Heartwell, Kalamazoo, etc.

III.

How to Prepare the Seed Bed on Upland, Clay, Sand, Etc.

This is by no means an easy matter. Such soil should be mixed with black muck, leaf mold,

and old dung, from three to four years old. About one part of old dung should be mixed with three parts of the original soil.

Another good way to prepare the bed is to mix swamp earth, if any can be obtained, with an equal quantity of the upland soil. The bed should be prepared during the fall, and should be made in a low spot, not subject, however, to washings from higher places. In the spring, about the 1st of May for this latitude, the seed should be sown. Before sowing, the bed should be raked level. If it is desired that the plants stand broadcast, sow the seed in that way and rake it in.

But it is usually more desirable that the plants stand in rows, in which case the seed must be sown in shallow trenches ½ an inch deep, and covered from ¼ to ½ inch with mellow earth, free from stones and lumps. To cover the seed sow the earth on, but if very mellow it may be raked on with the head of a garden rake. After sowing the seed roll the bed with a heavy garden roller, or tramp it down with the feet. (See chapter V.)

IV.

How to Prepare the Seed Bed on Low or Very Wet Land.

The seed bed may be prepared on low or very wet land, but not in close proximity to springs; in such a place the young plants would get chilled in early spring. See to it that the bed is well spaded. Use only well rotted manure, and use it sparingly; it should be spaded under well to avoid burning the plants. As a rule plants do better on low, swampy, but well drained land, than on upland. Celery is a native of such ground. Tramp the bed down well, as recommended in the next chapter; it will keep the hot sun out, the bed will be cooler, and the plants will not burn so quickly.

V.

How to Avoid Sprinkling the Seed Bed.

By very simple management it will not be necessary to sprinkle the seed bed in any kind of weather, especially if the bed is made of black muck. Pull on a pair of old shoes without heels and tramp the bed down even at all places. A pair of old rubber boots without heels may be

used with good effect. The bed should be tramped immediately after the seed is sown and not left to dry out before the tramping is done. (But do not tramp it while *very* wet, as it will then bake and become sour.) A bed thus tramped need not be sprinkled, even though it appear dry on top. By careful observation it will be found that there is a greenish, dry crust on top, due to the hot sun and the acid in the soil. This crust will protect the bed from excessive heat of the sun, but will in no way injure the plants. As a rule, the plants in these tramped seed beds are a little later. However, the time saved in sprinkling will amply repay all trouble of tramping.

Though the bed be prepared on upland, it, also, should be tramped as described above. If too dry, wet it thoroughly with the sprinkler or hose, then, after the surplus water has run off or settled away, tramp the bed down as already directed. After the plants are up, if the bed appear to be too dry, wet it thoroughly and tramp it. No injury need be done to the plants, if care be taken and shoes without heels be used. If the bed seems dry, tramp it immediately after a rain. Before pulling plants from one of these

tramped seed beds, wet that part of it from which the plants are to be taken. Otherwise, what are sometimes called the working roots of the plants, may be injured, and without them it is difficult to start the plants.

VI.

How to Get Strong, Stocky Plants.

When the plants are about two inches high, thin them out so that there are about five or six to the square inch. Before thinning, cut them back a little with a knife or a pair of shears.

This should be repeated as often as it appears that the plants are crowding one another. Cutting the plants back occasionally admits the air to circulate freely among them and will insure healthy, stocky plants, well rooted and that can stand trans-planting at any time.

Of course, in trans-planting, the ground where the plants are trans-planted should be made wet as directed in another chapter

VII.

How to Raise Two Crops of Plants on the Same Seed Bed.

Where land is cheap there is no need of raising two crops on the same bed; but where rent is high and places suitable for beds are limited, it may be desirable to do so. It has been done by the writer many times. The first seed should be sown in March in a well prepared bed, covered with ordinary hot-bed sash. If hot-bed sash cannot be had, plant-bed cloth, tacked to home-made frames will answer the purpose. About the 15th of May the first crop of plants will be ready to be trans-planted and should be set out as soon as possible after they are large enough. As soon as the first crop has been removed from the bed, clean it of weeds, level with a rake or other implement, and sow it again with sprouted seed.

(For directions how to sprout seed, see next chapter.)

After covering the seed from 1/4 to 3/8 of an inch with mellow earth it should be well sprinkled so that no dry places remain underneath. Then the bed should be tramped down as solid as possible, as directed in chapter V.

If the bed should need a little shading to prevent the plants from burning, the best shading material is plant-bed cloth, the cheese cloth grade used by tobacco growers to protect tobacco plants from frost. The cloth should be tacked to home-made sash, and the sash should be laid on about 9 o'clock in the morning and removed about 4 in the afternoon. Judgment should be used in shading. No shading at all should be used unless there is danger of the plants being burned by the hot sun. Keep on shading till the plants can stand the heat of the sun.

If the medium grade plant-bed cloth is at hand, use it for shading. But if no plant bed cloth is to be had and there is danger of burning the plants, place strips across the frames and on these lay brush. Freshly cut brush with the leaves on is preferable, as not so much of it is required to produce the desired shade. The evidence that the plants are burning is unmistakable. The hot soil cooks the tender stem just at the surface of the ground and the plants droop over and lie on the ground. If, here and there, a plant is seen lying on the bed, it is time to begin shading in order to save the plants.

VIII.

How to Get the Plants Up Before the Weeds Come Up.

Get a large basin or pan, fill with nice mellow earth, free from stones, and moisten it well; then put in the seed you expect to sow and mix thoroughly with the soil. Keep it moist and warm, but not too warm. After 10 or 15 days the seed should be sprouted. If the seed is good, but is not sprouted by that time, it has been kept either too warm or too cold. If the former, it will never grow, so throw it out and try again. If the latter, set aside till it does sprout.

As soon as the seed is sprouted, sow it in drills and tramp down as already directed in chapter V. Under ordinary circumstances the plants will be up in a week, and before weeds make their appearance. This method should be resorted to in every weedy soil.

If the tiny little plants come up before the weeds, they have the advantage of the weeds for quite a time, till they have grown stronger and can stand weeding better. If they have to be weeded while puny, many a small plant will be pulled up with the weeds. If they are thick in

the bed the pulling up of a few does not matter so much; but if they are thin, then every plant should remain.

Here in Kalamazoo, where the soil is wet and swampy, a good method, and one which the writer adopts, is as follows:

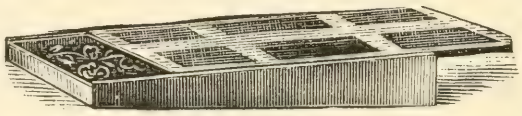
First, level the seed bed with a rake, then stretch a garden line across it and tramp furrows about a foot wide and a foot apart. In these furrows sow sprouted seed and cover it ¼ or ⅜ of an inch with soil raked from between the furrows with the head of the rake. If the seed is sown broadcast, tramp the whole bed down even as already directed. Such a bed will become green in a week or more and will be in good condition to stand the excessive heat of the sun.

Watch the seed bed and, if necessary, tramp it again, though the plants have been up two or three weeks or more. As previously instructed, tramp the bed after a rain, in case it needs tramping; but if no rain falls, then soak the bed with water and tramp after the water has settled away. No injury to the plants will result if the tramping be carefully done.

IX.

How to Get Early Plants Without Hot Beds.

This may be done by using plant-bed cloth. Tack the cloth to unglassed sash, or frames, made of strips of wood. Medium grade cloth will do, but heavy grade is better. The cloth



Frame of Plant-Bed Cloth.

will protect the plants against moderate frost, but in time of severe cold they should be further protected by straw or matting laid over the cloth. This early protection should be removed, however, as soon as the weather will permit.

X.

To Grow Early Celery.

Early celery is planted the same way as the late crop, in rows from 4½ to 5 feet apart, with the plants from 5 to 6 inches apart in the rows. The plants should be set carefully to avoid bruising. The ground must be well pulverized and level. The rows should be prepared by stretch-

ing a line and tramping down with the feet crosswise of the line one way, but in coming back with one foot lengthwise. Remove the line and wet down the rows. A good way to do this is to take the sprinkling attachment off the water can and use the can with the open spout. Soak the rows thoroughly before setting the plants. Wet them until there are no dry places underneath and until the holes made for the plants will stand open. When the soil is dry much wetting will be necessary, but when it is already quite moist, less will be required. In very dry weather, the plants should be sprinkled, which should always be done towards evening. Perhaps it is unnecessary to say that the sprinkling attachment should be put on the can for sprinkling. If the sprinkling be done at evening, the plants will have the whole night to revive. If, however, it appear that the hot sun is getting to much for the plants, get out the boards and commence shading at once. The process of shading has already been described in chapter VII., which see.

In this chapter it has been assumed that the ground had been already prepared for the transplanting of the plants. In following chapters we shall consider how the ground should be thus prepared.

XI.

The Varieties Adapted to Early and Medium Early Crops.

For very early crops, such varieties as the Golden Heart, the Kalamazoo, the Perfection-Heartwell, are well adapted; for medium early, plant such varieties as the White Plume and the Golden Self-Bleaching. But in a very dry climate, where irrigation must be depended upon, plant the varieties recommended in chapter II.

XII.

Two or More Crops in the Same Field.

If only one crop is to be raised on the same field, it can be planted quite close, with the rows not more than 4 or 4½ feet apart. But for two crops on the same field, the rows of the first should be at least 6 feet apart. Later, the second crop should be planted between the rows of the first. The first should be planted early in May; the second, by the middle of June. The first is taken out by the middle of July. Then if it is desired to raise a third crop on the same ground, it must be planted as soon as the first

crop is harvested, in the place from which it has been removed.

For this late or third crop, plant the Giant Paschal or Boston Market varieties. These kinds will stand the late frosty weather better than any other sort. The second crop must be harvested early; and to prevent freezing, the third crop must be hilled up as soon as the second is taken out.

If only two crops are grown, then there is no particular necessity of getting the first crop out before the 15th or 20th of August. It should be out by that time, however. It appears that blight attacks this older crop then much quicker than it does the younger celery, planted later.

If celery is desired for late August or early September, provide a bed of plants and get them in nice growing condition, ready to be transplanted about the 25th, or last of May. Set them out about that time and keep them in growing condition. If well worked they will escape blight and celery will be had at the time desired.

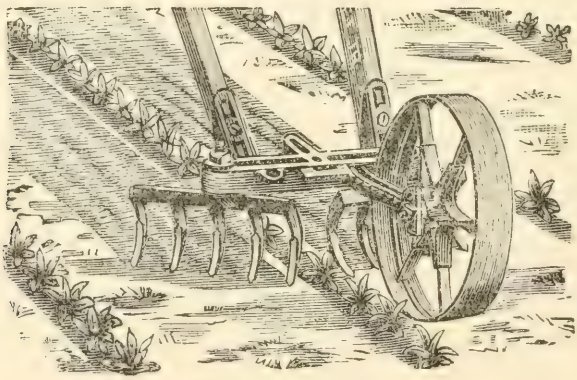
For particulars concerning blight, see chapter on blight.

XIII.

Tillage in Dry Weather.

To what has already been said, in chapter XII., we will add only this: On upland the plants should be set deep, and if they show signs of being too dry, water them thoroughly. One *thorough* watering will be more effective than five half done. To set the plants deep means to set them in furrows 6 inches deep or deeper. If they are set thus, when they are watered, the water will run towards the plants where it is needed.

Use the Planett Jr., double or single wheel



Stirring the Soil.

hoe, close to the rows after watering to prevent the earth from baking. Of course, the hoeing should not be done until half a day or a day after

the plants have been watered. This will give the water time to settle. Water as often as the plants show that they need it, or, better still, examine the soil and water the plants as often as it appears to be dry. The growth of the crop is thus prevented from receiving any check. Checks in the growth of celery afford opportunity for blight to attack it.

If the plants seem to be growing but little or not at all, but this is not due to lack of moisture, then drill in a fertilizer at the next watering. Drill it in just before watering so that it may be dissolved, washed down and act upon the roots of the plants. You will thus renew the growth of the plants and prevent blight in seasons of blight.

XIV.

Ditches.

Ditches are not needed on upland to any extent. Good open furrows that will carry off the surplus water from heavy rains is about all that is needed. But on low land ditching is a matter of much importance.

On low land, where ditches are needed to carry off the water from rains, springs and other

sources, it is advisable to run the ditches lengthwise of the piece. For instance, if the patch is 40 rods long and 10 rods wide, dig the ditch the 40 rod way. Both ends being open, the ditches on low land should be two feet wide and two feet deep. On very wet, springy soil, make them deeper and wider. Just how far apart the ditches should be is difficult to tell without seeing the ground. However, we will give some general directions. Here in Kalamazoo, Mich., there are some three kinds of black muck to deal with; the ordinary, dry; the quite wet; the very wet and springy. On the first mentioned, the ditches should be 8 or 10 rods apart; on the second they should be about 4 rods apart; on the last, 2 rods. We are unable to get on to the last kind here with a horse, therefore, the manure must be spaded under in the spring with a spading fork. It costs a great deal of labor to work such patches of celery ground. Here, they are depended upon in August and early September.

Besides the ditches already described, there must be a cross ditch at each end to carry the water from the other ditches to some outlet. If water stand on the patch for a couple of days it will ruin the crop if the celery is well grown; but

if the plants are young they will outgrow the bad effect after a long time. Care should be taken to have ample drainage, that such a catastrophe be avoided.

In very dry weather dam up the ditches on the ends that no water may escape. However, never allow the water to stand on a level with the edge of the ditch. It may stand at the most within one foot of the edge, and then for a few days only. If the land gives an abundance of water, let it off once in a while. Leave the ends of the ditches open a few days that the surplus water may run off thoroughly.

XV.

Tillage.

This has been given quite fully in preceding chapters, therefore, I will not repeat what may be found there, but will only add a few words concerning weeds.

A patch of celery should be kept perfectly free from weeds. They should be attended to and destroyed when very small, as soon as they appear. This can be done easily then by the use of the hoe, wheel hoe or cultivator, and if thus

attended to they will never be seen again. But if they get the start of you and grow to quite a size, then the best thing to do is to employ sufficient help to pull them up and carry them off. As soon as the weeding is completed, use the wheel hoe to break the crust, give the celery fresh air, and destroy the millions of weeds that are just coming up. In case the weeds get such a start that the rows of celery cannot be seen, the celery is almost beyond recovery, and the best thing to do is to destroy both weeds and celery together and plant the field over again, if not too late in the season. The new plants, if kept clean, will do better than the older ones choked with weeds.

XVI.

Manures and Fertilizers.

Well rotted stable manure is the best and should be used in preference to fertilizers if it can be had. Have it well rotted, especially if your field is a dry one. On very wet soil coarser manure answers the purpose. Coarse manure is productive of weeds; but where the patch is small weeds can be checked promptly. The looseness of coarse manure is an advantage.

From 20 to 40, or even 60 loads of well rotted manure may be used on an acre. It should be plowed under from 5 to 6 inches and well covered.

There are so many different kinds of commercial fertilizers on the market that it is difficult to say which is the best. A good way is to test several different kinds by using them on rows side by side. You can thus determine what kind is best adapted to your soil. Of course the fertilizer should be drilled in deep enough to be effective; and, if the weather is dry and there is no prospect of a good rain soon, soak the ground with water over the drills, so that the fertilizer will dissolve, permeate the soil and act upon the roots of the plants. Doubtless, there are, every year, thousands of dollars' worth of fertilizers sown and drilled in that never do any good, simply because they are sown in dry weather and the weather continues dry. Under these conditions the fertilizer can have no effect. In purchasing fertilizers, state to the manufacturers that you wish it for growing celery, and on what kind of soil you wish to use it.

Some celery growers have their fertilizers manufactured for them according to a special formula of their own, adapted to their soil. This

formula is determined by an analysis of the soil, which will be done in most cases by the state experiment station, free of cost to the applicant, except transportation charges.

XVII.

Early Plants Without Expensive Hot-Beds.

Use hot-bed sash and lay them on rafters as long as the sash, in the usual way. The rafters should be set up in hot-house fashion with the peak high enough to walk under. Such cheap hot-houses are sometimes made on upland with the walk in the middle dug out from 2 to 3 feet. In this way the rafters need not be so steep, and, therefore, the bed may be wider. Here, in Kalamazoo, on the muck, they are generally built 10 feet wide with a path in the middle. They should be built with the length of the house, north and south; and if the house is over 30 feet long it should have a stove at each end. The stove pipes should be close to the west side of the walk and connected in the middle by a T. There should be a door at each end, and if the sun is very hot, the door should be open to allow a draft through the house to carry off the exces-

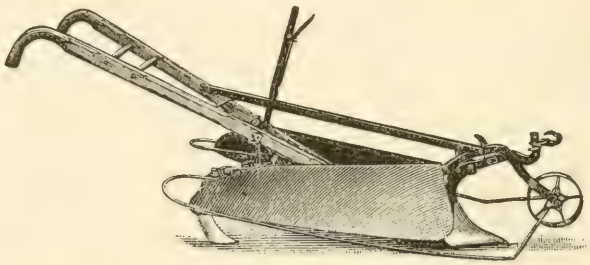
sive heat. In a short house, in which only one stove is needed, it may stand at one end and the pipe go out at the other. There should be a door also to avoid over heating.

Another inexpensive way of obtaining early plants is to dig a hole 2 or more feet deep, fill it in with fresh horse manure, build your frame over it, and lay on the sash. If the heat is mostly out of the manure and the temperature of it is about 70°, put on your dirt and sow the seed in the hot-house fashion as already described. The bed needs only a little well-rotted manure to make it rich. It should be worked into the soil thoroughly. There should be from 5 to 7 inches of dirt on top of the manure in the bottom of the hole. On hot days the doors should be open or the sash lifted; it may be necessary to open the doors and lift the sash both. Do not allow the temperature to rise above 95°. To prevent a higher temperature than this, take the sash off altogether, shade with brush having the green leaves on, or whitewash the glass. Should the temperature rise to 100° or more, the plants would most likely be burned.

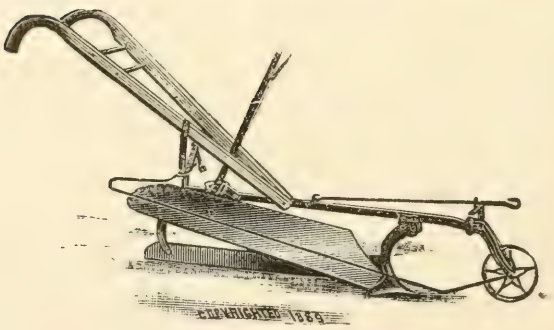
XVIII.

Bleaching With Dirt Without Rust.

The first thing to be done is to cultivate between the rows. A Planett Jr., single or double celery hiller is the best thing to use for this purpose. Hill it up first about one-half, taking great care not to hill up close against the plants. After about a week the same operation should be



Double Celery Hiller.



Single Celery Hiller.

gone through with again. Take great care not to bring the dirt close up against the celery. Then after a week or 10 days more the earth should be

drawn up close to the celery in order that it may bleach quickly. After it is bleached, harvest it at once and sell as soon as possible.

It is not advisable to do the final drawing up of the earth to the whole crop at once, but only to a row or half a row at a time, as fast as there is a demand for the celery.

After the final dressing up of the earth, the celery ought to be bleached in a week or so. Watch closely that it does not get bleached without your knowing it. The last drawing up is best done by hand, with a wide-bladed hoe, say about 12 to 18 inches wide, if the soil is muck; if upland and rather hard a hoe 8 inches wide will do. The first hilling should be done carefully so that no dirt may get into the heart of the celery. If the ground is too dry, wait till it rains so that it will pack and remain where placed. If it should not rain, use boards to bleach with. In autumn the soil may be drawn up tight that the bleaching may be done quicker. Late in the season when the ground gets cooled off the bleaching takes place more slowly. If there is danger of frost, hill the celery up as high as possible and then pull the dirt over the tops with a hoe, covering the whole thing completely.

XIX.

Snow-white Bleaching Without Dirt.

If soil cannot be used on both sides of the rows, some other means of bleaching must be sought.

Drain tile set over the plants, one over each, will bleach them very nicely and quickly, if not too hot. Take the leaves in one hand and with the other set the tile over the plant. Some use a new bleacher made of veneering, such as berry boxes are made of. It can be wound around the plant like paper and tied on. It will last quite a long time if used carefully, and stored as soon as the bleaching is done. Still another good way is to use boards. Set one on each side, draw them up close, and hold them in place by cross cleats. Plow with a Planett Jr., hand plow a furrow up against the board on each side to exclude the air and light.

Still another good way is to use matting. Tie a piece around each stalk or plant. Some use thick brown paper with good success. It is difficult to say just what is best to use for bleaching, but doubtless that material would best be used which can be gotten the cheapest. In warm

weather celery may be bleached white in 10 or 15 days, and should be taken out as soon as bleached. Do not put any more in the bleach every day than there is demand for. This will prevent the celery from getting too ripe. Celery, when too ripe, is springy, soft and unpalatable. Choice celery for eating should be crisp and brittle and snap like a pipe stem. Over-ripe celery is stringy and will bend without breaking. Experienced celery eaters are aware of this and do not want it at any price. Inexperienced people think if the stalks are large and look nice it is all right, while such is not the case, as the small, white, brittle stalks are the choicest for eating. I have had it many times, as sweet as sugar. Celery is of the finest flavor in the months of December, January, February and March. Some growers say that it must remain in the bleaching trenches long enough to have the outer leaves rot off before it has attained its full, sweet flavor.

XX.

Size of Stalks for Bleaching.

This can be explained in few words. The idea generally in vogue here is that celery from 1 inch to ¼ inch in diameter, after trimming, is

good celery. From all celery some of the leaves must be trimmed, generally from 4 to 6 leaves will be sufficient. We do not consider celery good here if too short. It should be from 20 to 30 inches long, well bleached, and of the size mentioned above to be considered first-class. To ascertain whether the celery is large enough for bleaching, go over the field occasionally, stretching the hand around some of the average stalks and if you find them running 2 inches, or a little less, in diameter, it can be considered of sufficient size. There will be occasional small stalks, which should be thrown out. We do not even trim them here, but leave them on the field with the trimmings; but if there is a demand for small celery it can be trimmed and worked up to advantage.

XXI.

When to Commence Earthing Up For Winter Use.

For winter use, October is the date here, farther south it can be done later, while north of Kalamazoo, Mich., it should be done even earlier than the date given above. To give the exact

date for each state and locality is impossible. I would advise to commence hilling up about half way about the last of the 3d week in September. When ice forms later on of 1/8 inch thickness, hurry your celery into hills. If you have severe dry weather and the weather bureau reports frosts, hurry your celery into hills so it will be well hilled up by the time a killing frost comes. At this time it is well to apply to your nearest weather signal station for daily weather reports. They will be forwarded free and such reports have many times saved a crop of celery, tomatoes or other vegetables. While the ground is dry and hot and there is frost at night, there is much more danger from freezing then when the ground is cold and wet.

If there is room enough between the rows the banks should slope at about an angle of 32° to insure perfect standing, for if too steep and the earth is dry it will fall away from the stalks; the wind will also cause it to do the same thing. I advise having the rows at least 5 or 6 feet apart, and even 7 or 8 feet distance is still better. Then you have plenty of room to make nice sloping banks that will stand and it can also be hilled up high enough. If you should, by error,

have the rows too close together, say less than 4 feet, and cannot bring the dirt high enough by a celery hiller, (Planett Jr., single brings it higher than any other machine that has come to our notice), then the spade has to be used and the dirt dug from between the rows and set up against the celery. It should be hilled up high, only letting the leaves appear 2 or 3 inches above the dirt. When the weather becomes unsafe, it should be taken out and stored in store houses built for the purpose, or in frost proof trenches. A small patch may be left in the ground as late as possible and then cared for quickly; but when you have a large quantity I advise promptness, so as not to be surprised by a hard frost. In case of danger cover the tops with snow or soil, being sure to use enough, or if you wish to hurry it out and haven't time to trench it, you can dig with plow, spading fork or regular celery digger and throw the celery flat upon the ground. We, as a rule, throw it between the rows in the deep furrows and cover over with dirt from the celery hills, next to it. It will keep, if weather is cold, for quite a long time. I have seen it kept from December 1st to February 15th in good shape; but it needs careful

watching, and if time and weather permit should be set up in trenches. In case of rain it needs immediate attention, as lying in the deep furrows it would be directly in the water, which it cannot stand. When throwing out we cover with about three inches of dirt, and if weather grows severe we cover deeper with either dirt, or snow if there should be any. We lay the celery straight with tops all in the same direction and about 3 or 4 rows in one furrow. We have some trouble with celery becoming crooked. In such cases it has to be taken out promptly and trenched. In some seasons celery can lie a long time without becoming crooked. The time of its becoming crooked is uncertain, but it is advisable to watch it carefully and if there is a tendency to crookedness, hurry it into trenches if the weather will permit. It may be added, that if it is desired to bleach the celery, that is if quite green when thrown out, it should be set up promptly, as it will not bleach well lying on the ground.

XXII.

To Earth Up in Some Climates Without Trenching.

This is simply done by covering the banks or hills over with 2 or 3 inches of dirt, or more if

weather is severe. Having wide, thick banks or hills on top, the rows can be covered snug and deep. Of course this can only be done farther south, where the ground only freezes to a depth of a few inches and must be regulated by the gardner's knowledge in this respect; for instance, if the ground never freezes deeper than 3 inches the rows should be covered about 2½ inches deep, and the same rule applies if it freezes deeper. If as far north as where the ground freezes to a depth of 10 inches, and there is plenty of room between the rows to cover them up sufficiently to protect from frost, it is advisable to do so. Much work can be saved by putting three rows together. Remove the dirt from each side of the middle row, then set each of the others against it. Two persons can work handily at this, one person setting up the stalks, the other following throws up the dirt to keep it in place. In this way celery can be kept a long time. In this vicinity we do this from November 1st to 15th, or even later, if the weather permits. In southern Indiana this is about all the protection needed, but it must be regulated by the locality and the severity of the weather, as no one rule will apply to all localities or seasons;

but, as a rule, a depth of 3 inches at first is sufficient, to which more should be added as the weather grows colder. The tops of the celery may be touched a little by frost without injury; in fact, the dirt may here and there be frozen to the leaves, but this is the *dead line,* and it should be prevented from going any farther by adding more dirt, or snow, if the dirt is not convenient.

XXIII.

To Have Celery for Christmas.

To have celery ready for the Christmas holidays with absolute certainty, it is best to have bleached celery set aside for it. Early in the season, say first half of November, half bleached celery can be set in trenches. Set close together and cover over with dirt to force it; but watch it carefully and try each trench ever other day, at least. In climate where celery can be left safely out of doors, it is not necessary to bother with trenches. All that is required is to commence bleaching by hilling it up about 4 to 6 weeks before the time it will be needed, and it will be ready on time. Should it rust, take it out and store loose in trenches or storage house.

XXIV.

To Have Celery in February, March and April.

To have celery as late as this requires work It should be taken out of the narrow trenches every three or four weeks, if weather is pleasant enough to allow. Lay it with the roots exposed to the sun; dry it well, so that the white hairy roots become entirely dried up. Repeat this as soon as new white roots form ¾ of an inch long. In this way it can be kept until April. It is best to set such celery in narrow trenches, not over 6 inches wide, which should be on top of the ground, or rather on level ground, to avoid surface and other water. In open weather remove the covering of dirt to give the celery air; or this can be accomplished by placing 3 inch tile, about 10 feet apart. Set the tile so that the lower end just touches the celery, and stuff the top of tile with straw to prevent freezing.

It will not keep in storage houses, and it is advisable not to put in more than enough for two or three weeks demand. Put such in as is ready for market and thus avoid the necessity of taking celery from the trenches on cold days.

XXV.

How to Build and How to Use Storage Coops.

Storage coops may be built with either peak or shed roof. Some build with shed roof with one side high and the other running to within 2 feet of the ground; but the peak roof is preferable and more convenient. The walls should be 2 feet high, and the roof of good lumber if no shingles are used. It is advisable to have a double roof with 6 or 8 inches between; the space should be filled with sawdust, or any other good packing material. This filling is frost proof. If the houses are built firm so they will not settle, they look neat and tasty and their appearance can be much improved by painting, which is advisable in town; but in the country cheaper ones can be constructed, and instead of the double roof, the single roof may be covered with old straw or coarse manure about a foot thick, which will keep out the frost. By uncovering and taking off this packing in the spring, such a house will last a long time. It is not advisable to put the main supply in these houses, but have the crop in trenches, using the houses for about two weeks'

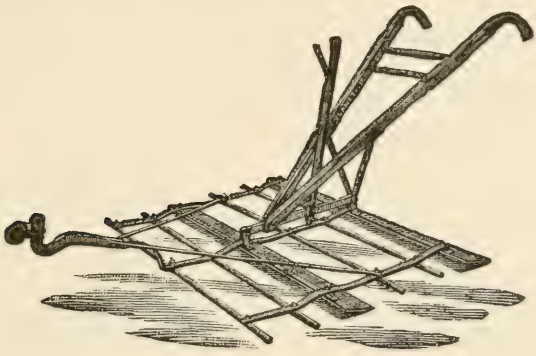
supply. Here in Kalamazoo such houses are filled on nice days. They are also used to trim in during cold weather. It is very necessary to watch celery closely if left in these houses more than two or three weeks. On nice days give it plenty of air, as the damp, close air is injurious and will cause the celery to rot. We set the celery in racks or frames made from narrow boards. If the house is on black muck it will not need sprinkling; but on the upland the bottom should be watered to prevent wilting of the celery. If the celery is inclined to wilt, a board set up against it along the path will prevent it.

XXVI.

How to Prepare a Field on High or Low Land.

First, level the field, then draw on the manure, which should be well rotted if upland, but on low, wet land, coarse horse manure seems better. After spreading it should be plowed under, one man plowing and another raking into the furrows, which should be done very thoroughly, taking pains to follow the plow, raking

well into the furrows; and see, also, that the plow does good work, covering all of the manure. After the field is plowed it should be leveled at



A Leveler.

once, and if dry, the land roller may be put on also, after it has been leveled, keeping all the moisture in the soil. If the supply of manure is limited, there not being sufficient to spread over the entire surface, it is advisable to put in trenches, which is done by first plowing and leveling the field, then marking where it is desirable to have the rows, taking pains to see that the rows are straight, as a fine crop of celery in crooked rows looks badly. In marking, use a shovel plow, making the furrows from 7 to 9 inches deep. Into these furrows spread the manure, which can be taken to its place in wheelbarrows, or in wide-tired cart or wagon if the ground is soft. After the manure is spread

evenly in the rows it should be covered with a horse hoe or shovel plow, or by a wide-bladed hand hoe, to a depth of 5 or 6 inches, and then tramped down thoroughly to prevent its drying out. It will pay to take the time to stretch a line over the row to be tramped as a guide to keep the rows straight.

XXVII.

How a Late Crop of Celery May be Raised in Bean Fields.

If the land is upland and rich enough, no manure is necessary, but take off the top soil where the rows are wanted; this will furnish a nice furrow, which should be thoroughly soaked with water; the furrow will hold the water where it is needed. It will need from 2 to 4 inches, according to the dryness of the land on top. Should it not grow well after planting, drill in some fertilizer alongside of the rows. After drilling in the fertilizer, soak it down with water, so it will dissolve and act upon the roots. Such a crop should be planted as early as possible, as it grows much more slowly than in wet soil. The Giant Paschal is the best variety to plant, though

a few half rows of other good green varieties are advisable also. Some of which may prove to do better in some soil than the first variety and can afterward be planted instead.

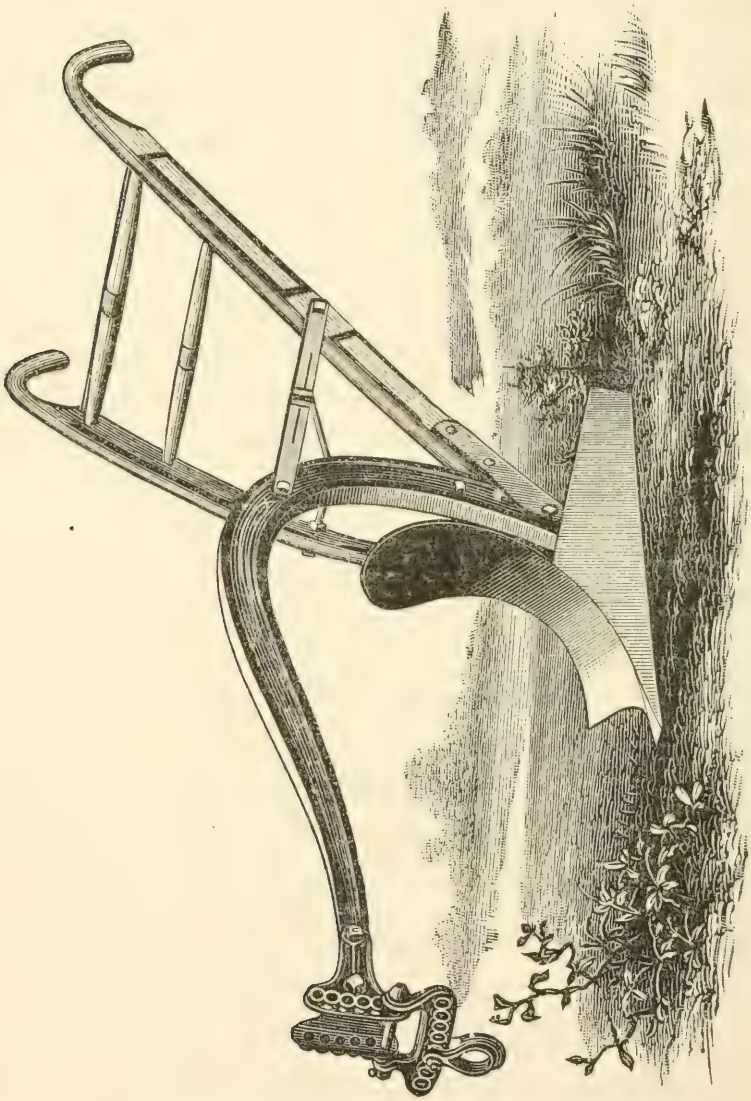
On lowland a second crop should be worked nearly in the same manner, only do not plant in furrows, but as near on a level as possible, as by going too deep the low damp subsoil does not help the growth. In planting celery between any other crop, select such crop that is out by or before September so that the celery can be well cultivated and cleaned from weeds before commencing to bank it.

XXVIII.

Tools to use in Celery Growing.

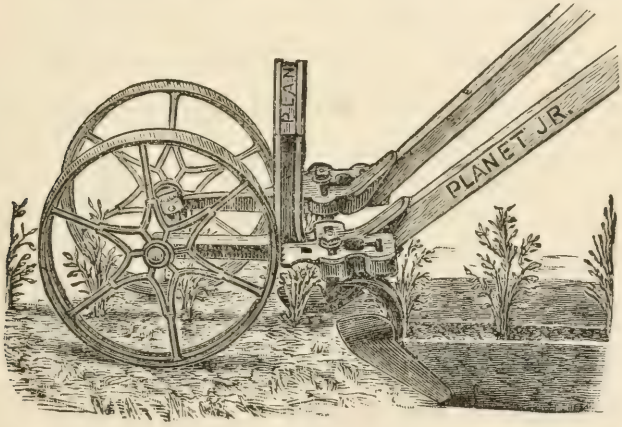
Among the necessary tools may be named first, a good plow, and it should be a *good* one, that will turn the furrows clear over and that will cover the manure well in plowing it under, next a pulverizer and leveler. A 10 or 12 tooth cultivator with wheel, it should have fine teeth not over an inch wide in order to cultivate close to the rows without covering the small plants. A common winged shovel plow for making furrows for putting in manure, if not desirable to plow under

the whole patch. A Planet Jr. double or single celery hiller. A single hiller is preferred for many



reasons. It is not so hard on a horse and can be used to advantage no matter how far the rows

are apart. In hand tools some wide bladed hoes and if land is marshy the hoes should be from 12 to 16 or 18 inches wide and 4 inches high. The soil being light a wide bladed hoe works to perfection and can be used for making furrows, covering manure and for banking up the celery. The single or double wheel hoe should be at hand to stir up the soil after rains and keep down the weeds. For stirring up the soil use the rakes. If weedy use the hoes, after becoming



used to these machines it is easy to keep the celery patch clean, going once in a while along and pulling out the weeds in the rows. Formerly all the hoeing and stirring up of the soil was done by hand, now it is nearly all done with the wheel hoes, saving an immense amount of time, one man now doing with a wheel hoe nearly as much as ten men could formerly do by hand.

XXIX.

To Prepare Celery for Eastern and Western Markets.

For the western market take 12 good bleached stalks with nearly all the green stems trimmed off and the butt or root end pointed or cut off square, after washing clean the 12 stalks are tied with common grocery twine or narrow blue or red ribbon. They are called bunch, dozen, etc. If some of the stalks are small add a couple to make a good bunch. Always be careful to see that the bunches are just as good inside as out. One of the strings or ribbons should be near the top just under the green leaves and the other as low as possible. For eastern market trim as above except that the butt or root ends should be pointed instead of cut off square. After washing the three or four stalks together get 12 such bunches and tie together getting the lower string around the butt end and the upper one away up in the green leaves, Another way which grocers and hotel keepers prefer is to take 6 stalks tie them together in the western way with ribbon or string. They generally will pay more for two half bunches than for one full bunch as some grocers cannot dispose of more than

one-half bunch per day. Experience will prove in many cases that the half bunches of 6 stalks is the most profitable way to put it up.

XXX.

How to Wash it Quickly.

Prepare a tank large enough to hold from three to four barrels of water, if celery is grown upon a small scale a two barrel tank would be large enough. Washing is done with a whisk broom or scrubbing brush. Wash thoroughly and after a little experience it can be done rapidly. Some men being able to tie as many as 600 to 800 bunches per day of ten hours. One boy does the washing. After the bunches are tied they should be set up on end to drain. Keep the bunches in a cool shady place to prevent wilting if the weather is hot. In warm weather always have fresh water every day no matter how little celery has been washed in it the day before. It should be clean fresh water as old water in which celery has been washed the previous day will turn the celery black. If weather and water are cold warm the water by pouring in hot water before putting in the celery as by pouring the hot water in the tank while

the celery is in, the quality of the celery is injured or spoiled by the hot water coming in contact with it.

XXXI.

Boxes to use for Different Numbers of Twelve Stalk Bunches in Shipping.

All boxes should be from 24 to 28 inches long, the ends should be of one inch stuff planed on one side, and the following are the required sizes of the ends:

6 x 8 will hold 4 bunches western style, 2 bunches at each end.

6 x 12 will hold 6 bunches.

6 x 16 will hold 8 bunches.

6 x 20 will hold 10 bunches.

6 x 24 will hold 12 bunches.

The stuff 24 or 28 inches long should be of one inch planed on both sides then ripped being then a little less than one-half inch thick, the 6 inch part of the box is called the side.

XXXII.

How to Pack so as to Reach Destination in Good Condition.

The bunches should be set on end so that the water will all drain off. When nearly dry

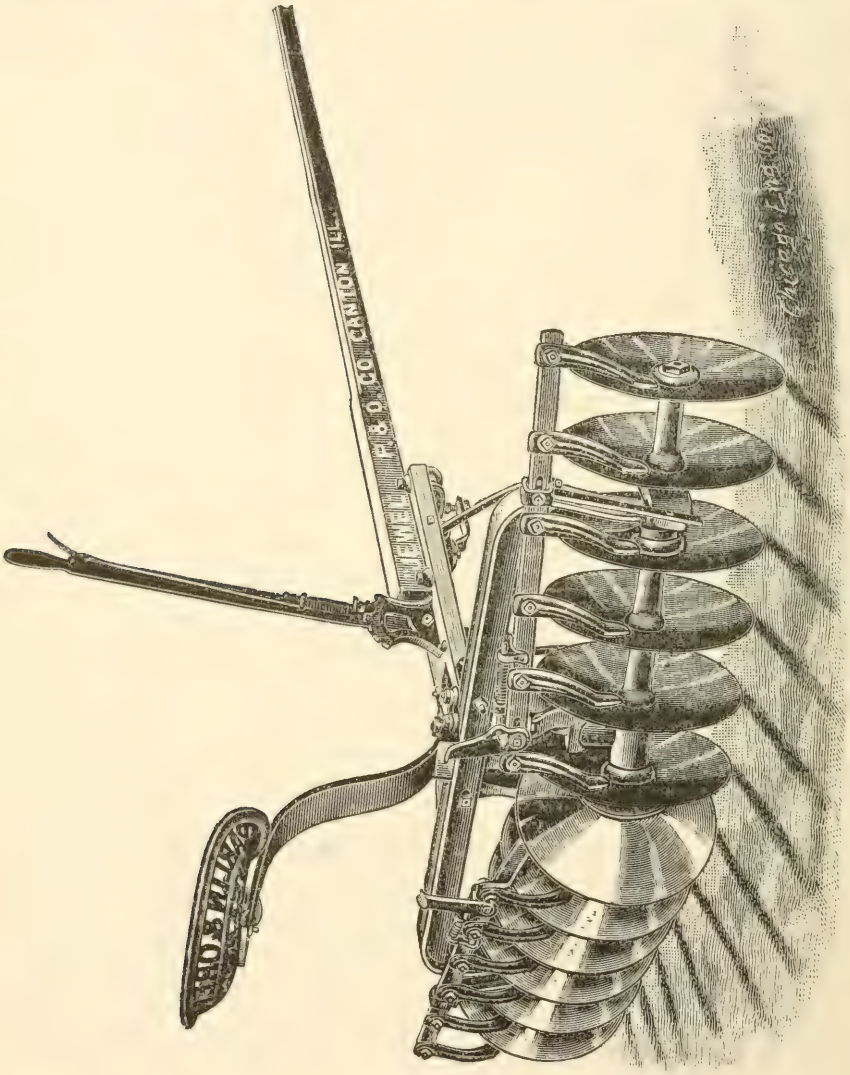
roll each bunch in thick brown paper, the bunches should be so dry that they will not soak through the paper. They should be packed in boxes in a cool room if possible. Rolling in paper prevents heating in the box. In freezing weather the box should be lined with similiar paper and if zero weather there should be four thickness of paper in the box as lining, which will be almost a sure protection against freezing if put in so that there are no cracks or openings. Care should be taken to lay the paper close together.

XXXIII.

How and When to Break up Soil so as to Have no Trouble with Grass.

To have no trouble with grass in the first place requires a good man at the plow, as the plow must throw the furrows entirely over and any part that the plow by accident does not throw entirely over should be tramped down to its place. Procure a Disc Harrow like the cut herein. Pulverize the soil on top well. The chisel harrows are not to be recommended as they seem not well adapted to work up sod for celery ground as they cut up the sod when what is desired is that the black dirt be pulverized fine

and the sod kept whole but turned completely under to rot beneath the fine soil. A chisel



harrow will bring some pieces of sod to the top which grow as soon as they come to the light

which should be prevented. The proper way to get the manure in well is as follows:

Do not plow *around* the field as on a farm, but plow length wise only covering the manure well in each furrow, but if manure is insufficient for each furrow put in every third furrow, marking each end of the furrows containing manure by a stake driven even with the surface. If the field is wide back plow leaving the dead furrows open and shovel out a little and use as a ditch in which to allow the surface water to run off. After plowing use the Disc Harrow and pulverize as fine as possible.

Commence planting as soon as the plants are of sufficient size, setting the plants over the furrows in which the manure has been placed.

Never allow the patch to lie plowed without getting it thoroughly pulverized, otherwise it will dry out which should be prevented by all means, especially when the weather is dry with little or no prospect of rain.

Another good way to manure the patch is to spread fine, well rotted manure over the field after it is plowed, then work it in with the Disc Harrow. Both of the above processes upon the same field have produced good celery, by first putting manure in every fourth furrow, then

staking it. After plowing put on 15 loads of very fine manure to the acre and working it in with the Disc. When the plants were small the roots worked in the fine manure that was harrowed in and when larger in that under the furrows. The advice given so far in this chapter is for low land. It is not advisable to plant celery on upland sod. Sod is dry and porous and there is generally plenty of fine nicely work upland to be had without bothering with sod. To prevent trouble with grass on low land it should be broken up in June, a few days before setting the celery plants as most of the growing of the grass is then done. Still a better way is to plow in the fall, putting in coarse manure and harrowing it fine with the Disc, letting the winter frosts act upon it and by spring most of the sod will have disappeared, and by using the Disc occasionally will prevent foul stuff from getting the advantage.

Of course the sod has some change to undergo, decomposition must take place which is effected by the soil being exposed to the amelionating influence of the winter frosts, but if the ground is not to be broken up until spring it is advisable to wait until the plants are nearly ready for setting as the grass does not grow so vigorously after the middle of June as in May.

XXXIV.

How to use Horses on Wet Soil Without Miring.

The only way this can be prevented is to prepare wooden shoes for them which are round pieces of two inch oak or elm plank to which are attached on top two swing irons which go over the horses hoof which are fastened by a screw bolt through the eyes in the swing irons. They are made and sold in Kalamazoo and cost $2.50 per set of four. They are not patented and have been made and in use here for at least fifteen years. Any blacksmith can make them if they only have one to get the idea from. There are some patented horse boots in the market which are just as good as those made by the blacksmith. There are also some that appear to be patented which are all iron, being made of malleable iron, but they are not considered as desirable, as the thin iron edges are liable to hurt the horse if he mires. With the two inch plank shoes on their hoofs there is not much danger of them getting hurt.

We are not in the business of selling shoes, but will to each reader of our book who has purchased the book of us or our agents, furnish

one new shoe complete, as used here, for $1.00 which will serve as a pattern from which others can be made. We offer this merely as an accommodation to our customers and no others.

XXXV.

How to do all the Work Except Planting With Horses and Agricultural Implements.

In the foregoing chapters it has been pointed out how to prepare the ground and what tools to use and it is unnecessary to repeat it all, but would refer the reader to the previous pages that treat upon it which are complete, except with regard to making the rows ready which must also be done by hand (for particulars see preceding chapters), but will further mention, avoid going on the patch in very wet weather as it will bake the soil. In dry weather cultivate shallow, but often so that the moisture in the soil be retained.

XXXVI.

Immense Profit From a Half Acre of Celery as a Second Crop.

To make an immense profit we must have a good market and must get from 40 to 75 cents

per bunch or dozen stalks. To make an estimate we will take the average, say 50 cent per bunch of 12 stalks. One-half acre has been known to produce (700) seven hundred dozen stalks of good celery, which at 50 cents would make $350, which is a good showing for a second crop. Also one-half acre has been known to produce two crops of good celery that netted the owner $800, he sold at 60 cents per bunch, and a still larger report that came to our notice was that one man made as much as $9,000 from a three acre lot in one year. The reader may judge for himself. Two crops of good celery on three acres will produce 9,000 bunches, at one dollar a bunch would make the sum of $9,000, which is not a bad showing for a three acre lot. It would be hardly possible to grow more than 9,000 bunches unless three or four crops were put in.

XXXVII.

What Varieties to Plant for Medium and Very Late Crops.

For medium early the following are recommended: "White Plume," "Golden Heart," "Perfection Hartwell" and the "Kalamazoo," and for very late keeping and late crop the "Giant

Paschal" and "Boston Market." Some new varieties that have proved very fine are the new "Kalamazoo Golden Heart," (in use here only) and the new "Perle LeGrande." It is desirable to get pure strains that are not mixed with other varieties. Some reputable houses have sold White Plume celery seed that had more than three different kinds of green variety among the White Plume, about one-half being White Plume and the balance other green varieties. Now the seed houses are not entirely at fault in the matter, but it is largely the fault of the gardener, who is unwilling to pay a fair price for good, pure seed, and the order goes where seed is offered the cheapest. The seedsman, in turn, must have the seed to offer cheap, and buys of the seed grower that will sell the cheapest. The quality is thus lost sight of. To get strictly pure seed is almost impossible; but buying from a careful grower of known reputation, and at a fair price, will enable the seedsman to offer fairly good seed.

The foregoing is as true of all other seeds as of celery. The seed growers of high reputation and good prices of years ago were forced more or less by growers of less experience to reduce prices in order to hold their trade. The White

Plume is an offspring of the green varieties, and has a tendency to reproduce a small percentage of green. No matter how far a patch of stock plants is set away from another patch of green, there are always accidents that the most careful seed grower cannot avoid. There may be a plant of wild celery growing in a ditch near by; an insect would carry the pollen from this over the patch of White Plume and fertilize it. The seed would be harvested and sold as the best; and of course the gardener would find out what kind of stuff it was and would blame the seedsman, who in turn would blame the grower, who would not know that there was any wild celery near his place the previous year, and would feel insulted, for he thought he had a fine stock of seed, but he had not and did not know it. Nature was tricky and responsible for the trouble. No seedsman can warrant his seed ; what can happen with the wild celery to a whole crop of different celery can happen to all seeds. But without drifting into seed growing it may be observed that these things may happen without blame to anyone, and it is advisable to use great care in selecting seeds. Here in Kalamazoo the careful celery growers always buy their seeds ahead ; what they expect to sow next season

they buy the year before and try it on a small scale with a row or two ; if found all right it is planted. if not it is thrown away. Some growers have from two to three years supply ahead. I have known samples called Giants that proved to be giants, but in almost every case were soft and pithy and of no value. Still softness cannot always be laid to the seed. To give a broader idea it may be said that where here and there big hollow stalks may be found amongst a good crop, the cause may be laid to the seed but the seed grower is undoubtedly not aware of how it happened. But Nature is very tricky in seed growing, and each soft stalk must be an offspring from some soft leaf on the stock plant or set ; but where we find the whole crop more or less soft and spongy, especially on the outside leaves it is no fault of the seed, but in most cases can be traced to other causes, such as the celery being too old, the land on which the celery was grown not being rich enough, very wet spells or close planting. It has been known to get soft even in trenches in wet spells when the trenches contained water. This is all mentioned to show that everything cannot be blamed to the seedsman. To insure a growth of solid celery we should *first* select good seed, *second* rich soil

and prevent close planting. Here is an accident that happened to a grower here in Kalamazoo a few years ago. He had a patch of 1¼ acres which was in rich shape and from which he expected to get a good many bunches. He went to work and planted the first crop 3½ feet apart, which was done on the first of June, having the plants for the second planting ready about the last of June. He planted between, making the rows some twenty inches apart. The first crop had, of course the start of the second planting, but the second crop did well for a while till nearly full grown when the tops were together and the whole field nearly covered, then a rainy spell set in of two weeks' duration ; the celery had not been dry during all that time and the wet spell finished it. It was all soft up to the heart and a total loss. The cause was close planting and wetness.

XXXVIII.

How to Manage Without Tiling.

Tiling is only needed where land is altogether too wet, and where tile is expensive, putting in brush is advisable, which can be done as follows : Cut a ditch three or four feet deep and eighteen inches wide at the bottom. In this

trench twelve inches of brush should be laid with the butt ends down. After the brush is in, sod should be laid over it to prevent clogging, then fill in the dirt that was taken out in digging the ditch. Such brush ditches will last a long time. Some built here fourteen years ago by laying old boards on top of the brush are good yet. Such ditches are generally laid across patches that have miry places in them and are laid so as to connect with the nearest ditch. Where tile is cheap it is preferable.

XXXIX.

How to Manage Low Peaty Soil.

Such land should at first be well ditched to provide an outlet for the accumulation of water during wet spells and in the spring. Peaty lumps should be dried, put in heaps and burned, or drawn off. If there is much of it it can be used for building roads through swamps or low lands. After the peat is removed the land should be plowed or spaded whichever can be done to best advantage.

XL.

How to Prevent Blight.

Most celery growers have had some experience with blight, one of the worst foes of the celery grower; and repeated inquiries come asking for a remedy for it. There seems to be no known cure for it and even if there were it would be so expensive as to cost more than the affected crop of celery. Yet let us not rest here but see if we cannot investigate deeper and learn the *cause* of blight and prevent it, which is better than a cure. While it cannot be entirely prevented it can be checked to quite a considerable extent. Having had an opportunity to study the matter thoroughly here in Kalamazoo, where so much celery is grown, one or two cases may be given as an illustration.

One fine field was planted close, the rows only being 4½ feet apart ; Between these were the second crop, of rank growth, being nearly as tall as the first crop. The two crops shaded the ground ; the first crop had to be boarded to get it bleached, so the roots of both crops were not disturbed. The first crop was taken out in a week ; the second crop was soon completely covered with blight about as bad as could be

imagined. Another field adjoining it did not show any sign of blight. It was the change that did it ; that second crop was used to a shady position ; after taking out the first crop the sun had free play, dried up the roots near the surface, which by the way support the outer leaves, and resulted in stunting the growth and a bad case of blight.

How to prevent it? It has been done. In another field similar to the above mentioned the first crop was hurried out, the trimmings cleaned and wheeled out, the second crop shallow cultivated with a wheel hoe with cultivator tooth in it, close up to the rows, and was followed up by a winged shovel plow and some dirt thrown alongside the rows. The change stunted the growth, but blight was prevented.

Why was it prevented ? The soil drawn up near the rows with the shovel plow saved the roots near the surface from being hurt by the fierce action of the sun. Did you ever see a Potted Geranium plant suffer for want of water? The topsoil was very dry, the lower leaves died and dropped off. Why did they drop first? Because the roots near the surface dried up and failed to support the lower leaves. Here we have a case similar to celery blight, the roots

near the surface fail to supply the outside stems with moisture. If these roots get destroyed celery is apt to get blight. To further show that it is heat, we have seen a field in a similar condition here in a cool September for three weeks without attention and the second crop did not show a sign of blight. We have seen blight fall on a patch of celery after cold heavy dews followed by extremely hot days. It was the change again which cannot be very easily prevented but it can in some cases be checked by cultivating the patch more or less with a fine-tooth cultivator for three or four days, shallow cultivating if the ground is dry, until the celery becomes accustomed to the heat, as it is the extreme heat and burning of the surface roots that cause blight. Plowing some dirt up close to the rows with a winged cultivator is also to be recommended to protect the roots.

Whether there are germs of this fearful plague floating in the air is not really known. Some think there are as in most cases of plant growth the disease attacks stunted neglected plants. So in celery a stunted patch is attacked by the pest, while a vigorous growing patch adjoining is exempt and not subject to it. It results from close planting, neglect

of cultivating, extreme close, hot, burning weather and the burning of surface roots. So it is best to plant in furrows as mentioned in a former Chapter so that the roots are not so near the surface. Second, plenty of shallow cultivating by hand and horse power to keep out the fearful heat of the sun. Third, cultivating on very hot days in the forenoon to get the celery accustomed to the heat, also avoid close planting, as it has often proved an invitation to celery blight to have too closely planted patches, especially in dry soil, while if the soil is spongy and very wet it will stand close planting much better as the wet soil keeps the roots cool and healthy. In dry summers there is the greater liability to blight, while with plenty of rain it does not do a great deal of harm. Yet it has been known to get into neglected fields after a heavy rain while fields that were well cultivated two or three times a week and cultivated after a rain as soon as dry enough to prevent baking will generally escape the pest. Farther south, where there is only a limited amount of rain it is advisable to plant the green varieties such as Perfection Hartwell and others similar to it. The White Plume is a tender variety and is a more easy victim to celery blight. Where it is

always dry the surface roots will penetrate downward and will not be near the surface. Of course, in such places the crop must be irrigated, but not too much or too long at a time. For particulars see chapter on irrigating.

It is thought that if at about August 15th, or a little later a little fertilizer be drilled in along the rows and soaked in if dry to act upon the roots, the ravages of blight can be greatly checked as it seems that about this time celery to a certain extent stops growing and is ripe for blight, especially that which is nearly full grown. Newly planted celery is in its full vigor and does not need it. If the nearly grown celery could be hurried up and started into more vigorous growth much blight could be prevented. Of course, if it is growing well it is not advisable, but when the growth is not thrifty it should be tried. It is not well to plant old neglected plants from early hot beds for medium early crop; had better wait till plants from cold beds or open ground are ready. Where the old neglected plants are used they are very liable to be affected with blight. But now the question is if we get the blight what are we going to do about it. Shall we throw the whole crop away and plant a new one if not too late? But if too late, what then? Procure a good

sickle or something similar, trim the rows of the dead looking celery, cutting some four or five inches from the top and along the sides. Cultivate well if there is room enough by horse power, then let them alone to gather new strength and recover from the shock. After a week or so it will be noticed they have commenced growing again, then some fertilizer drilled and soaked in will help them along greatly. Such celery should be banked and bleached as the late crop and might be sold when ready. Store it early as it is brittle and cannot stand much. It is not a total loss but requires considerable work. If some of the stalks run to seed do not pull them up but leave them to help bleach the remaining stalks. If the seeders are pulled there are open places and stalks standing near an open space will not bleach.

XLI.

How to Get a Crop of Celery from an Onion Field.

A crop of celery can be raised between onions ; there is ample room for a row of celery every six feet. Here onions are sown one foot apart, then an empty space twenty-four to thirty inches wide is left for the row of celery, which is

planted in this space the last part of June and should be done after a good rain to avoid the necessity of watering. Take care not to injure the onions ; if they lean over into the open space lay them carefully towards the inside ; a good crop of celery can thus be raised if the ground is rich enough. Where onions are grown on upland it is not advisable to attempt to grow celery between as one is liable there to have other land better adapted for it. In case land is limited proceed to work as indicated above. When planting prepare the rows the same as mentioned in previous chapters treating upon this subject.

XLII.

How to Prevent Rot in Trenches and How to Trench.

To prevent rot in trenches the celery should be sound and not half frozen. Yellow and decayed leaves should be trimmed off. In this latitude it should not be trenched until the latter part of October. After it has been in the trenches four weeks or so it should be taken out, the roots should be laid toward the sun to dry and to destroy the little white hairy roots that are around the old ones. This should be done on a nice sunny day, all decay trimmed off and

again trenched. After another three or four weeks repeat this operation and continue so to do until sold. Set in trenches from eight inches to a foot wide. We have a frame ten inches wide, sixteen feet long and two feet high. We only have a sixteen foot board on each side ten or twelve inches wide ; the ends are ten inches wide and twenty-four inches long. We set the legs down and trench in same. After the frame is full we throw up dirt on the sides as high as the celery, after which we lift the frame out (one man on each end) and start another. On very wet soil trenches should be set on a level ; on upland if high and well drained trenches may be dug deep, but take great care that no water gets in from any cause whatever, as it will ruin the celery. If by accident it does get in take the celery out at once and dry in the sun as previously recommended and retrench after it is well dried.

XLIII.

How to Prepare One Acre for Planting Two Crops in Three Days with One Man and a Horse.

This has been quite fully explained in a former chapter on leveling the soil. Draw on

the manure with a wide tired wagon, spread it and plow under and afterwards make rows ready for two crops about three or four feet apart. Plant every other row as the first crop. After about two weeks follow up with the second crop. Bleach out the first crop with dirt, tile or boards. If bleaching with dirt do not press it up close to the celery but have it lie just gently against it, which will prevent rust. See chapter on bleaching.

XLIV.

How to Get Four Crops from One Field in States South of Michigan.

The soil must be rich. The patch must be on low wet land, or if on upland it must be irrigated so that all the crops will get sufficient moisture to grow quickly. The first crop should be planted in rows six feet apart early in May, the second by the 20th of May at farthest. These two crops should be grown quickly and ready for market from June 25 to July 25 or August 10. As soon as a row is out clean the trimmings out and replant, using plenty of water on the rows before planting. The last planting should be done about August 15. It is advisable to plant every other row again so that the celery will ma-

ture in that order. If the first *second* crop is not early enough and it is early enough in the season commence hilling up early. If half bleached take out and trench ; after that is out there is room to hill or bank up the last crop. Leave the last crop in as long as possible ; it can then be kept away long into the spring if taken out late in season as mentioned in chapter on trenching. If there is no danger from frost the first of the second crop can be bleached with boards or tiles and the second or last crop, which is the fourth crop, with dirt, taking the first crop out as soon as there appears to be danger of frost. Then hurry it into narrow trenches and set it in loose to prevent heating. Leave the last crop in the ground as long as the weather will permit. Do not be in too great hurry. More celery is spoiled annually in trenches than by freezing in the ground. Celery does not freeze so quick if banked up deep so it can stand it. The last is even trenched when the snow is flying. For particulars see chapter on trenching, and preceding chapter, "How to handle it if there is a severe frost approaching or danger of one."

XLV.

How to Manage Dressed Celery with the Roots Off and Keep it for a Long Time.

Such celery should stand in a dark cool place straight up and down in about one-half inch of water, no deeper or it will soon turn yellow and spoil. Some keep it in one-half inch of water in a refrigerator which is advisable if convenient. If not it should be kept in a dark cool cellar. Celery that is put up with pointed butts will keep the longest as the entire points can be kept in the water without wetting the stalks.

XLVI.

How to Make a Transplanter.

By this it is not meant a machine to plant with but a marker, or in other words a marker that makes the holes for the plants. First take a piece of hard wood one inch thick, three inches wide and five feet long, in which bore ¾ inch holes five inches apart or as far apart as it is desired to set the plants, say from four to eight inches. In these holes drive short pieces of broom stick four or five inches long. Sharpen them so they will drive easily into the soil. Next get a similar piece of wood to the one into

which the pins have been driven only it need be only three-quarters of an inch thick, bore one inch holes in it the same distance apart as the pins. Now, take two coiled bed springs, place one around a pin at each end of the first stick and also to the second so that the pins will slide back and forth through the holes. The marker is now complete. By stepping on the top piece the pins are forced into the ground and the springs will lift the pins out the moment the foot is removed. All that is now necessary is a frame to handle it with, which can readily be made of light strong stuff three or four feet high according to the height of the person who is to use it.

XLVII.

How to Save Time with it.

To save time with it it should be used after the rows are soaked and ready for planting. Stretch the line and force the holes alongside the line with the marker in which place the plants. After becoming used to it more than half of the time taken by the old way may be saved, but it will not do to use the marker on too freshly soaked rows as the soil will adhere to the pins and prevent making good holes for the plants. These machines have been in use so long that it

is not likely a valid patent on them could be obtained and there is little or no danger from infringement on patents if marker is made in accordance with directions given.

XLVIII.

How to Grow Celery on Exhausted Land.

To grow celery on poor land we must have manure. Poor land will not produce good celery without it ; but if manure is scarce it is advisable to put it in furrows as mentioned in a preceding chapter, using well rotted manure ; ten loads per acre will do ; fifteen to twenty are better ; that, of course means for one crop. For two crops it is recommended to spread it on the whole field. Work is thus saved and it can be planted at convenience. If no more than five loads can be had it is advisable to drill in a little fertilizer a month after the celery is planted. If there is a prospect of rain drill in just before the rain and save the necessity of watering it down. If necessary to irrigate drill in the fertilizer first for the same reason as given above. About six weeks after planting drill in a little more fertilizer and see that it is soaked into the ground. Drill it in on the north side of the rows if they run east and west. Good plant food

should be used. It is well to correspond with the State Experiment Station or Agricultural College and learn which is the best fertilizer for celery. Fertilizers must be drilled in and well dissolved to act upon the roots if there is any benefit to be expected from it. Do not drill in too much at a time; it is better to drill in smaller quantities often than too much at once. Sometimes bales of fertilizer are used that do more harm than good. It was drilled in dry, no water used and no rain followed, so it actually burned the surface roots and helped to induce blight.

Remember fertilizers are strong. The advice given in this chapter is for low muck soil. On poor upland it is not advisable to try to raise celery at all.

XLIX.

How to Grow and Manage Celery on High Mountain Land.

What is meant by the above is elevated or upland. The patch to be selected for celery should be level or nearly so to prevent washing in case of heavy rains. Below is an explanation of how celery can be grown on such land. We must have old rotten manure three years old or

older. Dig or plow trenches three feet wide and from twelve to eighteen inches deep. In these trenches put from six to eight inches of the rotten manure, or better still four inches and then a layer of the soil that was dug out in making the trench, say about two or three inches which should be mixed with the manure, then another layer of manure and soil till the trench is filled three or four inches below the level of the patch. Then put two or three inches of soil over this. If leaf-mold can be obtained by the wagon load from the woods it is better still. Now such beds will take from two to three rows of celery 10 inches apart and from five to seven inches apart in the row. These beds have to be watered, so it is best to allow eight feet or so between the beds for a road over which to haul the water, which may be procured from a stream near by, or, if not, from the tank of a windmill or any other convenient place. If a stream can be dammed so as to turn the water on the patch it is well to do so. (See chapters on irrigation.)

The water put on should all remain in the beds and not run over the wagon road, which can be prevented by banking up along the edges of trench to prevent its running off. The beds should be watered well and then let alone until they need

water again. It is not well to water a little every day, as it is impossible to know whether too much or too little water is being used. Some beds appeared to be dry on top, while six inches below they were altogether too wet. So after watering it is best to stir up the soil to get it in a healthy condition ; then it will dry out even and not get sour and in bad shape at the bottom. Celery should not suffer for want of water, yet it should not have too much, as it will produce blight, especially upon that which is planted early, while on the later crop it will produce softness.

From all of the foregoing some of the readers of this book may think it is very difficult to grow celery successfully, yet it is not. Still everything should be done carefully and not overdone. (See chapter on irrigation.)

Gardeners not having much ground can lay two beds close together, say 18 to 24 inches apart, then a wagon road ; then they can water a bed on each side of the road. After such a crop is large enough it should be banked up either with soil or boards. Half way with dirt is advisable, but avoid putting the dirt up too close to the outer rows as it will be liable to rust. If the soil is rather wet it will stay up nicely. After

such banks have been up a week or so set wide boards on top and pull inward so the whole closes up at the top. All the leaves of the three rows will make it quite close and it will bleach well in that way. It is very much like the new way which will be explained further along in this book, but the way explained in this chapter is preferable to the new way.

Celery must have water; when dry and the clouds fail we must get it from other sources. By drawing it on by hand or wagon or by irrigating in the manner pointed out in this chapter it is possible to get between the beds to water them, but in the new way it is not and growing celery without any water or rain is impossible.

L.

What Manure to Use to Get Black Dirt Out of Sandy Soil.

It is claimed that corn cobs will do it, but it may be impossible to get them by the load; also, it takes them a long time to become rotted enough to plant celery upon. Experience teaches that they will turn the soil black and change it also, but it takes from two to four years before they are decomposed. It is advis-

able to draw on a good coat from the swamp if near by, and if not leaf mold from the woods. If corn cobs are to be had put them in the hog pen, which helps them to get broken up fine; then haul them on to the patch and they will help to retain moisture. Black dirt is also helpful to retain moisture and celery will grow better on such prepared soil than on clear sandy mixed soil. Clay or loam ground should also be treated in the above manner.

LI.

How to Get Two Late Crops from One Field.

The first of the late crop should be planted about the middle of June and of the White Plume variety if there is a prospect of being able to dispose of it before it is time to bank up the second crop for winter. Rows should be from six to seven feet apart. Plant between these rows about July 15th plants of the Giant Paschal or any other good variety, such as "Perfection," "Golden Heart" or any other good green variety that is suitable for your market. It is not always best to grow what you like best, but what can be produced best on your land and what can be sold at the highest price. After the second

crop is in, work it well by stirring up the soil and hurry it along as fast as possible so that the White Plume will be large enough to hill up by September 15 to 20 at latest. It should be banked up before that time if stalks are large enough but watch carefully to prevent rust. By the 15th or 20th of October it should be out in this latitude ; if further south it can stand longer. Most any gardener can tell when there is danger from early frost.

If not all sold by the time the second crop is ready to be banked up and no ground to do it with, pull the first or White Plume out and trench ; then you will have room and can keep on selling from the first crop. If the patch is quite dry dig down, if trenching early, so the roots come into the moist soil, so the stalks will not wilt. Some gardeners carry water in bottom of trenches under the roots to prevent wilting. If wilted it is necessary to stop selling and let it revive, which sometimes takes four, five or more weeks, and the tops get disfigured and ragged and spoil the nice looking and fresh, green appearance. As soon as out hill up the late crop and if there is danger of frost, hill away up high so that the frost cannot cut a piece off from the late celery. It will not do to set October 15 as

a fixed date to hill up deep in this latitude even, as sometimes it is too late, but at others it has proved to be nearly two weeks too early, so it is only advisable to hill up in the half hill early so that the hearts shoot up ; then if there is danger of a frost it can be hurried into the deep hill at any time. Further south a much later date can be named on an average than here, but it must be left largely to the judgment of the reader to select that date which is best according to season and locality, only advising to be careful of extremes and avoid getting nipped by too much delay.

Again, the advice is: Have the first crop out as soon as possible and as soon as out hill up the late celery. If the first crop is bleached with boards, there will be room to hill up the second crop in the half hill before the first is out, which is best if it is getting late. Then you can hurry in the hill when first is out without waiting for the hearts to shoot up as said before. If not done they will smother and grow crooked and curl up. The heart of a good stalk of celery that is well bleached must be way up in the top.

Do the hilling with a single or double Planet, Jr., hiller. It does the work well and raises the hanging leaves right up. (For cut of it see

other pages and chapters "How to bank and cover up celery and have it out quite late in some latitudes, or leave it entirely outside all winter.")

LII.

How to Set Plants in Dry or Wet Weather.

In extremely dry weather have the rows in furrows. After the rows are in fine shape water heavily, tramp the rows down solid after watering; then water again, but not so heavily as at first. Examine before planting to be sure if wet to the bottom. That tramping down after the first watering will start the plants all *even* if done well. In other words the plants catch even, which is much to be desired to get an even, nice crop. Now, after stretching the line and getting the marker on it, commence planting, setting the plants tight and carefully. It sometimes happens that the sun is so strong that it burns the plants so they cannot stand it. In such cases put boards over the plants to keep the sun off. If the rows run east and west put the boards on the south side, hanging over to the north, putting a small stick under to hold the boards in place. If days are dark or rainy pull the boards

over to get plants used to the air and the morning sun up to nine o'clock and every day a little later till they get used to it. Some plants have to be nursed in this manner fully two weeks before they can stand the sun and before they are started enough to be alone. Sprinkling plants at evening is a good plan, as they then have the whole night in which to revive.

In wet weather it is not necessary to shade or water the rows so much. They have to be watered a little so as to be in good condition to plant, but if the rain is only a light shower pay no attention to it and treat your rows just as though it were dry weather and you will be safe. But if not well watered and the sun comes out after a light shower, there will be a loss of plants here and there, if not whole rows. In such cases it is generally best to pull the whole row out and plant over. Then water the rows heavily as recommended above.

In very wet weather do not plant in furrows, but on the level, as the heavy rains might wash the plants under. If washed under, stir up the soil so the plants can work through again. If there are signs that the plants are growing and breaking through get a hoe and remove some of the soil from the top of the plants. The sooner

this is done the better. If here and there a plant fails, stick some new plants in place. If after the plants are set it should rain, go onto the patch as soon as dry enough and stir up the soil with a wheel hoe to prevent its baking, and to keep it in a healthy condition. It sometimes seems impossible to get plants started that have been reset where others have failed after the first setting. In such cases tramp down with the heel, making a little hole, then with a water-can in one hand drop in some water, going over the entire row. After this is done go over the row again with the water ; after the water has settled away reset the plants. For resetting select strong, well rooted plants. It is well to get the planting over or resetting started, no matter how hot the weather, if treated with the heel and water as above mentioned.

LIII.

How to Prevent Land from Becoming Flooded Except that Lying Below River Level with Little Expense.

This is done by laying the patches in rounded or oval shape so that the water from rains will run off naturally into the side ditches.

There must be good judgment used in this matter. If the patch is dry and porous, very little rounding is necessary; if, on the other hand, miry and very wet, have the patch well rounded to get rid of the surplus water in extreme cases. If the patch is well worked and stirred up, it will first hold all the water it needs and the surplus will run off itself because it is rounded. In dry soil it is necessary to hold all the water that falls upon it and must have it rounded only a trifle. In case of extremes where there is not much rainfall, it is well to have the patch level. The same is true where irrigation is necessary.

LIV.

How to Get Long Celery Quick with a Little Horse Work.

To get long celery quick it is first necessary that it be in a good growing condition, that is, not stunted. If in the latter condition it will be necessary to drill in fertilizer and wash or soak in so it will grow again. As soon as large enough at the butt end, get the celery hiller and hill high banks along the rows, taking great care not to have it press too hard against the celery. After the hearts are way up hill up again along the

rows, still taking care to keep dirt away from the celery ; also, avoid hilling when the celery is wet with dew, as it would surely rust if banked up tight. As a rule we hill as high as the celery, sometimes even higher. The second hilling should be done two or three weeks after the first.

In another two weeks the celery willl be clear out of the banks, sticking out from five to eight inches and even higher. The growth has been forced from five to ten inches in length. If needed for the market, bleach it by hilling up higher, if room enough. Then squeeze the soil up close to the plants. Take out as soon as white. Do not let it stand in the hills very long after it is bleached, giving it no chance to rust or rot. Work it so as to get about as much as is needed for every day's demand, being careful not to start too much in the bleach at a time. By hilling a small quantity every day, about as demanded, loss by rust and rot may be prevented.

LV.

How to Prevent Celery from Getting Soft.

Some celery will grow soft no matter what the conditions are, the trouble being with the seed. Such celery will be soft in the heart as well as in the outside leaves. The leaves have holes and the stalks are hollow and there seems to be no possible remedy in such cases and we must prevent it in the solid varieties. First, do not plant too close, also keep it in growing condition. Prevent it from standing in water either when standing in rows or trenches. Neither let it stand too long in banks or in trenches when bleached, nor let the frost touch the crop very much if it can be prevented if not hilled up at all.

LVI.

How to Trim Celery for Market.

As the above has been explained in former chapters, it will be only necessary to add that trimming celery with long points makes it look longer. So if celery is short trim with long points, If long, but not large, trim off square or in such manner as suits your customers best.

LVII.

How to Thaw Out Celery so as Not to Spoil It.

This refers especially to celery that has frozen after being put in bunches. Such celery should not be handled much. It should be placed in cold water and if it has not been frozen too long the frost will all be drawn out. Never try to thaw celery by heat. Water fresh from the well is best and the celery should be entirely under water.

LVIII.

How to Treat Celery if it Gets Frozen in the Field.

If frozen in the field if not hilled or banked up it will soon thaw out by the sun or rain. Hill or bank up as high as possible, taking care not to have it too close on top. If time permits let such celery stand as long as possible, giving it a chance to recover from the frost. If after a few days it has grown out of the hills, bank up higher. If there is danger of more hard frost, cover over with dirt entirely. If late in the season and weather unsafe, trench or take out and cover

with dirt, laying the celery on its side. (For particulars see another chapter.)

If celery gets frozen in the bank or hill, bank up high at once and cover over, preventing another freezing in. As a general rule celery gets ruined on the second or third night instead of on the first. The early frosts seem to come in numbers of three, the first two nights the most severe. If celery is out in the hill and there is danger of a hard winter coming it is best to throw the celery right out and cover over after laying it sideways as explained in another chapter. Always be careful not to handle the frozen part of a celery stalk ; pull out by the lower or butt end. We break the plants out with a spade fork or spade, or plow the celery out with the plow by putting a peculiar curved knife on the landside of the plow. These plows are patented and are sold here.

LIX.

How to Draw the Frost off from Early Plants.

If plants appear to be frozen commence sprinkling them at or before seven o'clock in the morning and continue until revived and the frost

is out, thus escaping the hot sun of ten o'clock or later. The hot sun on frozen plants of about two inches high and smaller is dangerous. A good watering will soon revive them. On a dark morning if there is no danger of the sun coming out hot, only a little watering is necessary. They will gradually thaw out. Very young plants should be covered over so the frost cannot touch them. As a rule very early out door plants are kept in frames over which can be laid plant bed cloth frames and boards at night to exclude the frost. Plants very nearly ready to be set out need not be covered any more as they can stand it.

LX.

How to Store Celery in an Ordinary Cellar.

It should be a dry, cool cellar. The celery also must be dry and the decayed leaves trimmed off. Make apartments in the cellar about one foot wide and as long as needed Make of boards or strips as is most convenient. If of boards have them so high that the celery will not touch on the top. In other words have the boards so high that the celery cannot touch that in an adjoining apartment. If the cellar bottom

is dry, sprinkle it well before setting the celery in the apartments. Wilting must be prevented. If desirable to keep the celery a long time, take out to the light occasionally to destroy the white, hairy roots. Every three or four weeks is often enough if the cellar is not too warm. Exclude the light to prevent the leaves turning yellow too soon and watch for the white, hairy roots, and if they get to be one-half to three-fourths inches long they should be destroyed. The cellar bottom must be kept wet enough to prevent wilting and that the hairy roots may grow, which will if the bottom is wet enough. Always set the celery loose enough to prevent heating. A few stalks can be set in a box and sand shoveled about them and it will keep in good shape if weather and cellar is cool.

LXI.

How to Irrigate.

Celery is a native of swampy places and may be termed a semi-aquatic, one of the prerequisites to its culture being moist, but not wet, soil. So the water must be obtained from other sources if no rain falls. We must irrigate. The best plan is to select a field or patch upon which

water may be brought from a stream by damming. The water should be brought to the highest point of the patch and then run through open ditches or trenches to the lower end. If the patch slopes very much little dams should be built in the ditches or furrows a few rods apart to keep back the water and prevent its running off too fast. Let the water fill the trenches nearly to a level with the edges. After the water has soaked through to the middle of the patch let it run off entirely.

Stir up the soil as soon as possible when it can be done without baking. Never let water stand in the trenches more than two days. If dependent entirely upon irrigating, narrow patches are advisable, say about two rods, which allows the water to get soaked through to the middle more quickly and the ditches can be emptied so much sooner. The appearance of the soil will indicate how far the water has soaked through, as it will look damp on top when sufficiently soaked. Stir up the soil and cultivate after each irrigation to keep the ground in healthy condition and to prevent sourness. As before remarked never leave water standing high in ditches more than two days at longest. If kept in longer it will induce rot and blight in

summer and soft celery in autumn, and sometimes rot in the roots.

In southern states, latitude 33° and farther south, it is necessary to irrigate. If no wet mucky soil at hand and no stream near by to dam up for irrigation it is not advisable to try to raise celery except on a small scale, such as could be irrigated with water from a wind mill or artesian well. In such cases one patch can be irrigated three days or so, then turn the flow onto another and so on until all is irrigated; then commence with the first again if dry. How long it must lie before irrigating again depends upon circumstances. If very hot two weeks or even less; if cloudy and cool it would not dry so quick. The ground should be examined by digging up a spadeful; if at a depth of 4 or five inches the water can be pressed from it by squeezing it in the hand, it is wet enough and needs stirring up and cultivating. If it appears dry the water should be turned on. In some places it is necessary to build flumes to carry the water over hollow or low places. If celery is grown on a large scale it pays to build such flumes, even if they are 10 or 20 rods or longer; if on a small scale it is advisable to irrigate with water from a windmill, etc.

LXII.

About Celery that Runs to Seed.

The running to seed of celery is largely attributed to the fault of the seedsmen. This seems to be a mistake, as at one season a crop of celery was grown from a certain lot of seed and there was not a runner in it so the following season seed was sown from the same lot and behold, to the astonishment of the gardener, more than one-half his crop were seed runners. The third season a little of it was tried again and no runners were in it so it is to be concluded that the season has much to do with it. Experience proves it to be so, as one year there will be lots of runners and the next hardly any, and there seems to be more or less trouble with it every other year. Plants sown early and subject to frost a good many times are more liable to have seed runners than plants sown a little later that have not been stunted in their growth. Avoid setting plants that have been sown very early, especially for a late crop even if they are larger than younger thrifty plants. The larger ones may do if of the White Plume variety, as this variety is not so much subject to running to seed as the green varieties, so for early crop put in the

White Plume if the patch is wet enough to grow it. White Plume requires rich ground.

LXIII.

Notes on Southern Celery Growing.

Summer and autumn droughts present such serious obstacles to the growing of celery successfully, is the reason why so little southern grown is found in the markets. It is a vegetable that requires for its best development moist, bottom soils that are naturally rich in all the elements of plant food. Celery is a marsh plant, in fact, and demands a constant supply of water during the season of growth. In hot weather the evaporation from its leaves is very great and unless this loss is promptly replaced the plant soon wilts and receives a set back from which it recovers slowly.

It requires great care and watchfulness in the attempt to grow it with any degree of success on dry uplands, and it must be admitted the majority of gardeners in the south have heretofore failed to make it a profitable crop. Most of them conclude sooner or later that the crop costs more than it comes to, taking the seasons as they come.

This refers to summer or late spring set celery which is intended for fall and early winter maturity. There is no question that it can be grown with some degree of success under a system of mulching and irrigation, of watering, but the generality of gardeners in the south are not painstaking enough to make anything like a great success of the work.

A plant so useful as celery should be grown in every garden, even if it is not blanched for market purposes. It is not necessary to tell those who have had experience that the process of blanching with soil in the average dry and hot southern autumns causes the loss of much celery that had been very promising up to that time. There is no need for blanching celery that is only used for seasoning or that is to be cooked and served like asparagus. But few persons comparatively are aware what a choice dish cooked celery makes when properly cooked and served with butter, pepper, etc. It is generally used as a raw salad, simply eaten with salt. When blanched and used while fresh and crisp it is a dish always relished by cultivated tastes and, as is well known, possesses a therapeutic value in nearly all cases of nervous disorder.

The old time way of growing celery was to set out the plants in late spring or early summer, in deep trenches that had been dug out and manured a few weeks previously. The tall growing kinds were mostly used and the trenches made 3½ to 4 feet apart. This plan has been greatly modified of late years, and the coarse, tall, half-hollow sort entirely discarded along with the deep trenches. The kinds usually grown by amateurs now are the dwarf and half dwarf varieties, such as the Boston Market, Golden Dwarf, White Plume, Crawford's Half Dwarf. There is also a red variety much liked by some. Of course, new names are added every year and some are very desirable kinds. There is the Mammoth Solid for those who prefer the large kind. These dwarf kinds are set closely in furrows made by the plow, not deeper than three or four inches and rows 2½ to 3 feet apart, and by judicious cultivation kept growing until September, when the dirt is gradually drawn to the plants and the process of blanching begun.

LXIV.

The Bed System is Best in Small Gardens in the South.

Beds 3 to 3½ feet wide and long as desired, deeply broken, well manured, if necessary, with some non-heating manure and well raked, is prepared in due time for the plants, which should be of good size to transplant by March 15, for the earliest crop, and other plants should be held in reserve, or a late sowing of seed made for transplanting in May or June. Seed sown in January or February and the plants not pushed by cultivation will furnish the plants in proper time for the late crop. When ready to set out level the beds and roll slightly, and carefully set the selected plants in the bed 10x12 inches apart. Press the soil firmly to the roots and apply enough water to insure the rapid formation of new roots. The plants, once well established, only shallow hoeing, sufficient to keep the grass and weeds in check, should be given until the summer heat sets in; then between the plants should be well mulched with pine straw, handling the celery so that only the leaves are exposed to the sun. During protracted dry weather water must be supplied if the plants show the least dis-

position to wilt. Later in the fall additional mulching, for the purpose of blanching, must be given. Blanching can be secured with the use only of straw, and old newspapers may be called into use to lightly enfold the plants. Blanching with soil is to be avoided whenever practicable.

LXV.

Wheel Dibber.

It can be made easily and cheaply. In the first place get a piece of maple, oak or other hard wood log, say 15 inches in diameter and a foot long. This should be turned nicely and a hole bored through for a bolt to serve as an axle. Handles to be attached should be 1¼x2 inches and about five or six feet long of oak elm or ash. A hole must be bored through them three inches from one end for the axle bolt to go through. Eight inches of the other end is whittled round and smooth for the hands and a couple of cross bars should be nailed on to make it rigid. It is then a roller and may be used for that purpose in the garden, following after the seed sower or in any place where the use of a small roller is desirable. Inch holes are bored in a circle around the roller, middle way between the two ends, five

inches apart, and short wooden pegs or pins are inserted to act as dibbers. The weight of the roller presses each peg clear down into the soil, and thus holes just right for the young plants are made as fast as a person can walk. Of course the size of the roller should be such that the circumference is about 35, 40 or 45 inches, otherwise the pegs must be inserted nearer together or further apart.

LXVI.

Subsoiling, Etc.

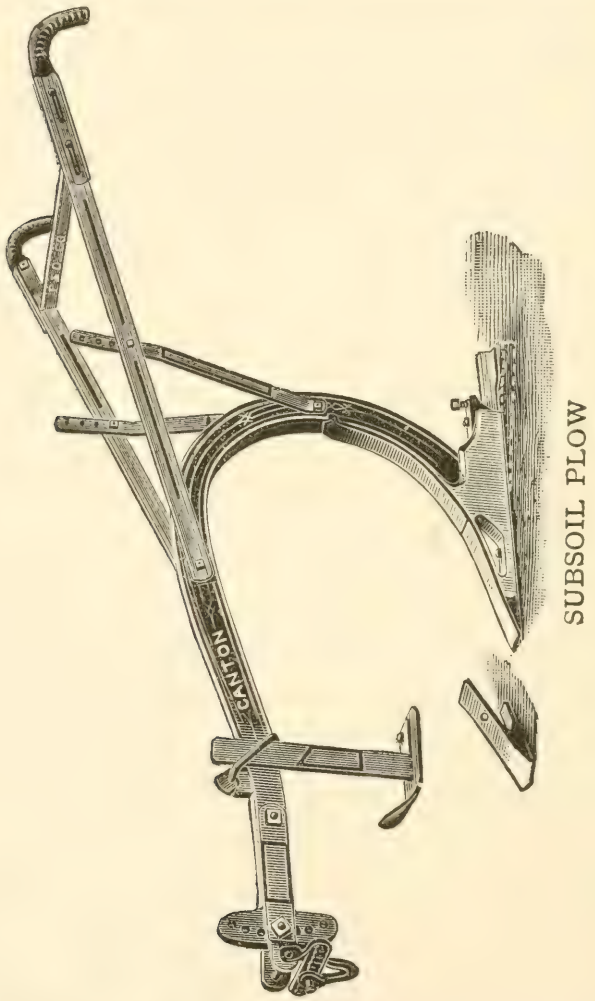
Retaining Moisture in the Soil.

The means of retaining soil moisture are various, including subsoil plowing, mulching, rolling, surface cultivation during the growing period and increasing in the soil the supply of humus, or as it may be more simply, the supply of vegetable matter. Any gardener in the land may adopt these measures with profit, and so intensely applicable are they that he may begin to practice them at once.

Subsoil plowing or subsoiling as it is sometimes called, is the stirring of the soil to a greater or less depth which immediately underlies the area that is ordinarily cultivated. In subsoiling

the under soil is only broken up; it is not brought to the surface. It is usually done by running a plow of peculiar make in the furrow which has been last made by an ordinary plow where plowing is being done. But it would also be correct to say that a farmer subsoils in a sense when he plows more deeply than he has plowed heretofore. One of the chief objections to that kind of subsoiling is the large quantities of subsoil earth which it brings up to the surface at one time. Subsoil earth is usually inferior in available plant food to surface earth until the elements work upon it, hence it should only be brought up very gradually. Subsoiling gives land greater power to retain moisture on the principle, first, that it disturbs the numerous little channels through which water has heretofore passed downward into the lower subsoil; second, by increasing the size of the interstices between the particles, so that more room is made for the retention of the water; and, third, it gives the land thus stirred greater power to arrest moisture ascending from a deeper source and to hold it for plants. And it allows the rootlets of plants the more readily to go downward and gather moisture and food than they could have done under other conditions.

Subsoiling is by no means equally helpful in thus increasing the absorption powers of soils. With some soils it actually decreases this power



SUBSOIL PLOW

by increasing their porosity to too great an extent. And no two kinds of soil, differing in their physical and mechanical constituents, are equally

affected by the process. The stiffest clays receive the most benefit, and the extent of the benefit decreases with the divergence from clay in the direction of greater porosity, until finally a point is reached when the benefit from subsoiling ceases entirely. Where coarse sand, therefore, or gravel lies near the surface, labor spent in subsoiling would seem futile. The power in such soils to hold water must be increased by other measures if increased at all.

The retention of soil moisture through mulching has received far too little attention. The winds of the prairie blow with more or less constancy through all the year. As the summer advances these winds become hot and dry and in proportion as they increase in warmth and dryness just in that proportion do they bear away more moisture from the soil. And in proportion as the soil is robbed of moisture will it be found that the crop suffers from lack of moisture. Now something can be done by means of mulching to stop this rapid evaporation of soil moisture. The straw that now goes up in smoke can be turned into litter and manure and then used as a mulch. If there is danger sometimes from burying such coarse litter under the soil there is no hazard in thus spreading it over the surface.

Soils thus protected will retain their moisture very much better than if not so protected, and the litter and the manure mixed with it will also tend to enrich them.

LXVII.

How to Make a Hotbed.

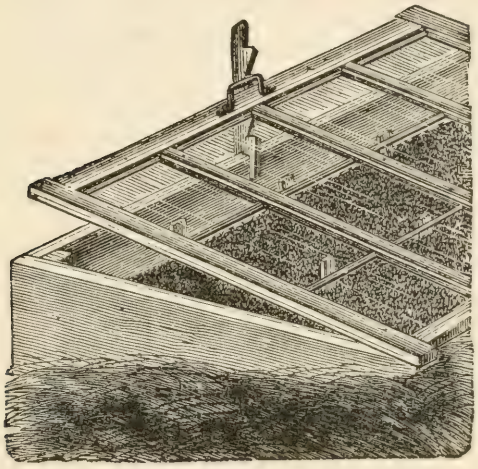
Definition. — It is a box or frame without bottom or top, made for one, two or more sash. It may be made permanent of brick or stone, or temporary of plank or one inch common boards, the back board about twenty inches high, one-half greater elevation than the front, which should be twelve to fourteen inches — the whole made to support a sash or several of any dimensions, the best of about three by six feet.

The back being higher than the front gives a declivity to the sash, thus casting off the rain, which it would not do if flat.

The box at proper season is placed upon a bed of fermenting material, which, making a gentle and continuous heat, warms up a layer of soil resting upon it, and thus germinates seed and forces plants into rapid growth.

Manure. — The value of the bed depends principally upon the character of the fermenting

material. This should be horse manure forked over two or three times at intervals of a week and kept in a deep and compact pile till it begins



to smoke or steam, indicating that the process of fermentation has set in. If the dung be very rich in grain an addition of forest leaves is desirable, as they serve to prolong the period of fermentation, which might otherwise be too rapid.

Location and making.—Select an unobstructed southerly exposure and if some building or tight board fence be situated so as to ward off the cold northwest winds it will be favorable; also, a well-drained location, and one never flooded by rain; excavate a pit one or two feet deep and one foot longer and one foot broader than the box. Into this place six inches

of rough barnyard manure, corn stalks, leaves or straw, for drainage, and on it lightly fork in the fermenting dung and tramp it firmly down to a depth of two feet. Place on the box and fit the sash lightly, cover with mats and allow fermentation to again proceed, banking up with hot manure on the outside all around at an angle of 45°. Place on top of the manure a layer of three inches of rich, moist, finely pulverized soil. In a day or so the temperature will rise to 120°. When the temperature has fallen to 90° destroy all the weeds which have sprouted and sow the seed. Cover every night with mats to exclude frost and give air during the day, never allowing the temperature to fall below 50° or rise above 90°. The secret of growing good plants is to give plenty of air, else the plants will be sickly, spindly specimens. Short, stocky plants are what are desired.

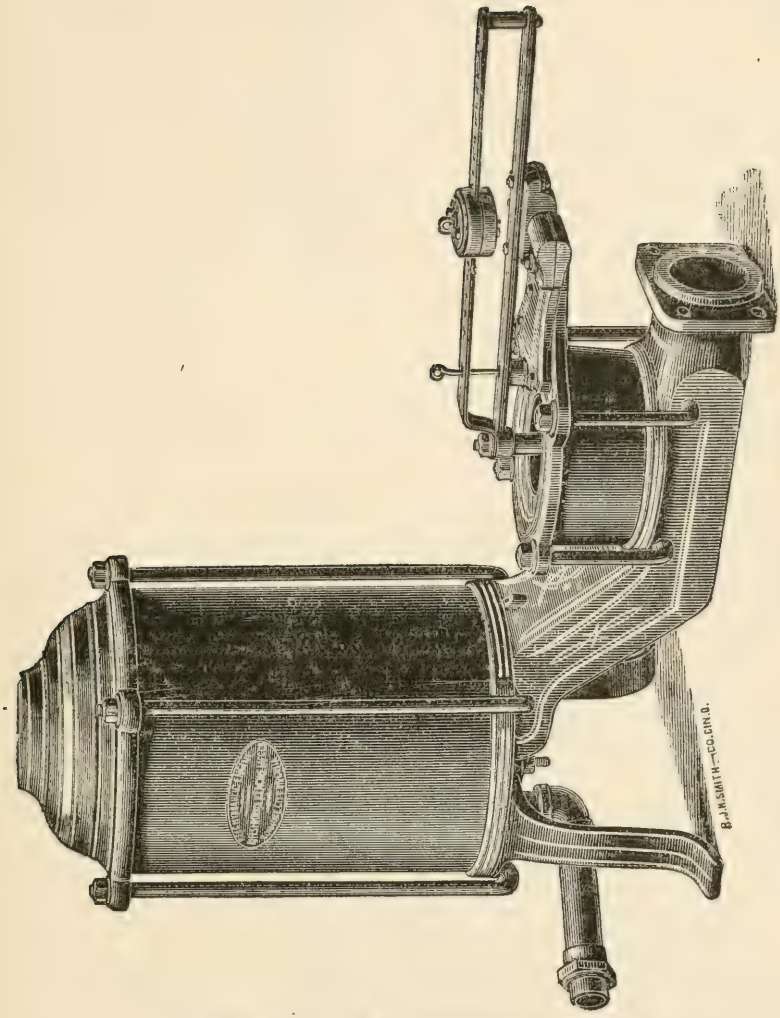
Care of hot beds. — Water evenings. Remove the mats every morning about 9 o'clock, give air about 10 o'clock. Cut off the air in the afternoon as soon as the air becomes chilly. Cover with mats before sunset. Hot beds should be covered early in the evening to retain their heat, and in the morning uncovered when the sun rests upon the glass, as every effort

should be made to give the plants all the sunlight possible, as its rays are vivifying to a degree beyond the amount of its heat, it having a chemical and physiological effect beyond explanation. Even dull light is better than no light, consequently it is a bad plan to cover sashes with mats, except for the direct purpose of keeping out cold. Success depends on bottom heat from the manure, top heat from the sun, water from daily application, and air at midday. Without plenty of air the other requisites will be fruitless.

Artificial heat.— We have known locations where horse manure for hot beds was not readily obtained, and to meet such conditions we give the following directions for manufacturing a fermenting material for the production of a moderate and continuous heat, the quantities named being sufficient for a box seven by twelve feet: Take as the crude materials, 500 lbs. of Straw, 3 bushels Powdered Quicklime, 6 lbs. Muriatic Acid, 6 lbs. Saltpetre.

Having prepared the excavation of proper dimensions, spread three or four inches of forest leaves or old hay in the bottom. Upon that spread eight inches of the straw, tramp it down and sprinkle with one-third part of the quicklime. Dilute the six pounds of muriatic acid with 20

gallons of water, and by means of an old broom, sprinkle the bed with one-third part of the solution. Make another layer of eight inches of straw, applying quicklime and the acid as before. Repeat for a third layer. Upon this make a fourth layer of straw, and upon it sprinkle the four pounds of saltpetre dissolved in thirty gallons of water. Place the box in position, bank up outside, within the box spread four inches rich, finely pulverized earth and put on the sash. A heat will soon be generated which will continue for two or three weeks.



Irrigating by Hydraulic Rams.

Where two to fifteen feet or more fall can be secured by a good running spring or stream, and irrigating has to be depended upon occasionally for moisture, and water cannot be brought on the field by ditches, it would pay celery gardeners to put in Hydraulic Rams. They work continually if a good make is secured. The expense after the machine is set is no more than one dollar per year. Great precaution should be used to get a make that does not water log and hammer itself to pieces. They generally raise the water pumped, 25 feet to every foot fall, and deliver ⅓ of the water used to drive it. Thousands and thousands of streams run now to waste that could be successfully harnessed up for rams to irrigate crops.

BRIEF COUNSEL.

1. When setting plants, avoid covering the heart of the plant.

2. Do not set deeper than they stood in the plant bed.

3. In dry weather trim an inch or so off the tops of the plants and cover the roots thoroughly with wet mud before setting.

4. Always trim the points off the long tap roots.

5. If your early plant beds, under glass or otherwise, in early spring, get over-watered so the soil becomes green, let it become so dry that the green crust will scale off. It will, thus treated, become healthy again.

6. If you are troubled with cut worms in celery, dig the "varmint" out and kill him. They lay close by the plant severed and just below the surface.

7. When setting plants press the soil firmly around the roots without bruising the plant.

8. If ground is hard and you do not have a pinned marker, use a dibble for making holes for plants; if soil is soft and nice, use the finger.

9. If your rows were tramped down so much that the plants stand in a narrow trench, with a hoe draw

the edge away from the rows, depositing it evenly over the space between. You thus avoid having the plants washed under by rains or having them stand in a hot trench and wilt after setting. You can also work it better with the wheel hoe.

10. Two pieces of board 5x10 inches with the lower edges rounded off and fastened on a pair of rubbers that fit your boot or shoe, make excellent tools to trample seed bed or rows with.

11. Before banking up with dirt go along and pull every weed out of the rows you intend to bank up. In autumn clean out even that webby substance from the rows, preventing rust and rot thereby.

12. When trenching celery set it straight up. By standing with your back toward the celery set up, you can kick the roots back from time to time. They are larger than the stalk itself and if not kicked back will gain on you so much that the celery in the trench is in a crooked, leaning condition, which must be avoided.

13. When irrigating celery let the water run along in furrows. Remember, celery likes a moist soil, but it is not an aquatic, so do not let water stand in or run through same patch longer than two days at a time.

14. Never plant celery for a second crop between early cabbage, as, from my experience here, the celery does not thrive.

15. Never lay boards on top of trenched celery. It will rot very quick under them.

16. A "Handy" hand weeder is useful for cleaning weeds from the rows.

17. Never water your seed bed or hot bed in early spring until dry. Watering too much at a time when the sun is not strong and while the weather is still cold will make the beds sour and green crusted.

18. For plant beds select a spot or soil that is not overloaded with weeds.

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